

# INSTALLATION RESTORATION PROGRAM

## DECISION DOCUMENT FOR IRP SITE NO.2 AREA BEHIND VEHICLE MAINTENANCE

162nd COMBAT COMMUNICATIONS GROUP  
and 149th COMBAT COMMUNICATIONS SQUADRON  
NORTH HIGHLANDS AIR NATIONAL GUARD STATION  
CALIFORNIA

FEBRUARY 1996

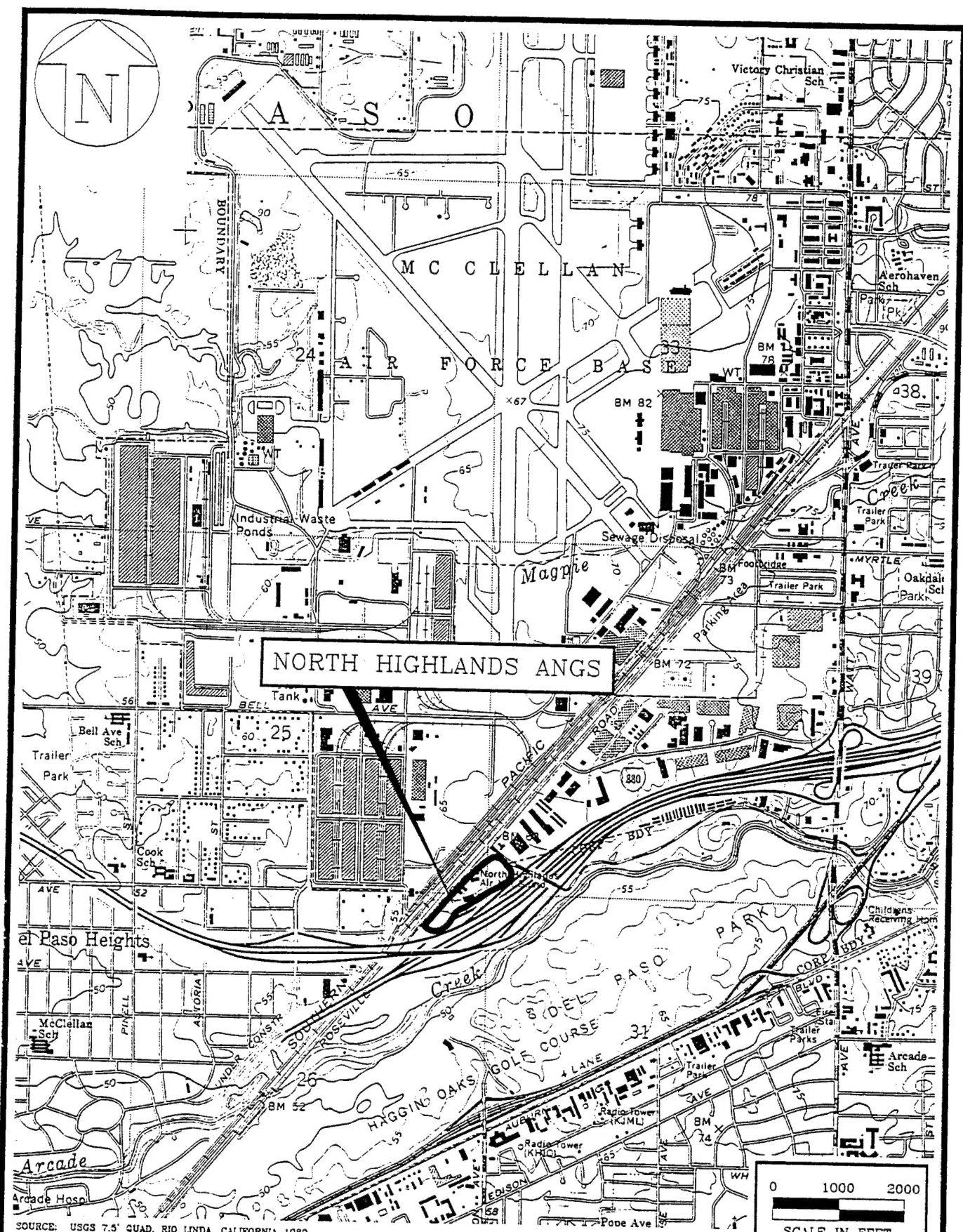
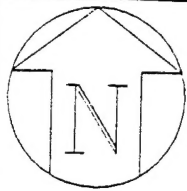


DECLASSIFICATION STATEMENT A

Approved for public release  
Distribution Unlimited

19960610 173

HQ ANG/CEVR  
ANDREWS AFB, MARYLAND



INSIDE  
FRONT  
COVER  
NORTH\NHGH4-1L

STATION LOCATION MAP  
162nd CCG & 149th CBCS  
North Highlands ANG  
California

OPTTECH  
OPERATIONAL TECHNOLOGIES  
CORPORATION

FEBRUARY 1998

**REPORT DOCUMENTATION PAGE**Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

**1. AGENCY USE ONLY (Leave blank)****2. REPORT DATE**  
February 1996**3. REPORT TYPE AND DATES COVERED**  
Decision Document**4. TITLE AND SUBTITLE**

Decision Document for IRP Site No. 2, California Air National Guard, 162nd CCGP &amp; 149th CCSQ, North Highlands Air National Guard Station, North Highlands, CA

**5. FUNDING NUMBERS****6. AUTHOR(S)**

NA

**7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)**Operational Technologies Corp.  
4100 N.W. Loop 410, Suite 230  
San Antonio, TX 78229-4253**8. PERFORMING ORGANIZATION  
REPORT NUMBER****9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)**ANG/CEVR  
3500 Fetchet Avenue  
Andrews AFB MD 20762-5157**10. SPONSORING/MONITORING  
AGENCY REPORT NUMBER****11. SUPPLEMENTARY NOTES****12a. DISTRIBUTION / AVAILABILITY STATEMENT**Approved for public release;  
distribution is unlimited**12b. DISTRIBUTION CODE****13. ABSTRACT (Maximum 200 words)**

Decision Document for IRP Site No. 2, California Air National Guard, 162nd CCGP & 149th CCSQ, North Highlands Air National Guard Station, North Highlands, CA. The sites were investigated under the Installation Restoration Program. Soil and groundwater samples were collected and analyzed. This document summarizes the information in the Site Investigation Report and is the official recommendation for No Further Action at the IRP Site..

**14. SUBJECT TERMS**

Installation Restoration Program; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); Air National Guard; Site Investigation, California Air National Guard; North Highlands, California

**15. NUMBER OF PAGES**

34

**16. PRICE CODE****17. SECURITY CLASSIFICATION  
OF REPORT**  
Unclassified**18. SECURITY CLASSIFICATION  
OF THIS PAGE**  
Unclassified**19. SECURITY CLASSIFICATION  
OF ABSTRACT**  
Unclassified**20. LIMITATION OF ABSTRACT**  
None

## GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet optical scanning requirements.

### Block 1. Agency Use Only (Leave blank).

**Block 2. Report Date.** Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

**Block 3. Type of Report and Dates Covered.** State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

**Block 4. Title and Subtitle.** A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

**Block 5. Funding Numbers.** To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

<b>C</b> - Contract	<b>PR</b> - Project
<b>G</b> - Grant	<b>TA</b> - Task
<b>PE</b> - Program Element	<b>WU</b> - Work Unit Accession No.

**Block 6. Author(s).** Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

**Block 7. Performing Organization Name(s) and Address(es).** Self-explanatory.

**Block 8. Performing Organization Report Number.** Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

**Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es).** Self-explanatory.

**Block 10. Sponsoring/Monitoring Agency Report Number.** (If known)

**Block 11. Supplementary Notes.** Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

**Block 12a. Distribution/Availability Statement.** Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

**DOD** - See DoDD 5230.24, "Distribution Statements on Technical Documents."

**DOE** - See authorities.

**NASA** - See Handbook NHB 2200.2.

**NTIS** - Leave blank.

### Block 12b. Distribution Code.

**DOD** - Leave blank.

**DOE** - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

**NASA** - Leave blank.

**NTIS** - Leave blank.

**Block 13. Abstract.** Include a brief (Maximum 200 words) factual summary of the most significant information contained in the report.

**Block 14. Subject Terms.** Keywords or phrases identifying major subjects in the report.

**Block 15. Number of Pages.** Enter the total number of pages.

**Block 16. Price Code.** Enter appropriate price code (NTIS only).

**Blocks 17. - 19. Security Classifications.** Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

**Block 20. Limitation of Abstract.** This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

# **INSTALLATION RESTORATION PROGRAM**

## **DECISION DOCUMENT FOR IRP SITE NO.2 AREA BEHIND VEHICLE MAINTENANCE**

**162nd COMBAT COMMUNICATIONS GROUP  
and 149th COMBAT COMMUNICATIONS SQUADRON  
NORTH HIGHLANDS AIR NATIONAL GUARD STATION  
CALIFORNIA**

**FEBRUARY 1996**

**DTIC QUALITY INSPECTED 2**

*Prepared For*

**HQ ANG/CEVR  
ANDREWS AFB, MARYLAND**

*Prepared By*

**Operational Technologies Corporation  
4100 N.W. Loop 410, Suite 230  
San Antonio, Texas 78229-4253**

Document Purchasing Notice

Copies of this report may be purchased from:

National Technical Information Service  
5285 Port Royal Road  
Springfield, Virginia 22161

Federal Government agencies and their contractors registered with the Defense Technical Information Center should direct copies of this report to:

Defense Technical Information Center  
Cameron Station  
Alexandria, Virginia 22304-6155

## TABLE OF CONTENTS

	Page
TABLE OF CONTENTS . . . . .	i
LIST OF FIGURES . . . . .	iii
LIST OF TABLES . . . . .	v
LIST OF ACRONYMS . . . . .	vii
SECTION 1.0 INTRODUCTION . . . . .	1
1.1 PURPOSE . . . . .	1
1.2 LOCATION . . . . .	2
1.3 ENVIRONMENTAL SETTING . . . . .	2
SECTION 2.0 BACKGROUND . . . . .	6
2.1 SITE HISTORY . . . . .	6
2.2 INVESTIGATION RESULTS . . . . .	9
2.2.1 Preliminary Assessment . . . . .	9
2.2.2 Site Investigation . . . . .	9
2.3 PRELIMINARY RISK ASSESSMENT . . . . .	11
2.3.1 Conclusions and Recommendations . . . . .	14
SECTION 3.0 CONCLUSIONS . . . . .	14
SECTION 4.0 RECOMMENDATION . . . . .	15
SECTION 5.0 DECISION . . . . .	15
SECTION 6.0 REFERENCES . . . . .	16
APPENDIX	
LETTERS FROM DEPARTMENT OF TOXIC SUBSTANCES CONTROL AND CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD	

**THIS PAGE INTENTIONALLY LEFT BLANK**



Decision Document for IRP Site No. 2, Area Behind Vehicle Maintenance Shop  
162nd CCG and 149th CBCS  
North Highland ANG, California

LIST OF FIGURES

Figure	Page
Cover Station Location Map . . . . .	Inside Front Cover
1 Station Location Map . . . . .	3
2 Surface Water Drainage Map . . . . .	5
3 Location of IRP Site No. 2 . . . . .	7
4 IRP Site No. 2 Site Plan . . . . .	8
5 Soil Boring Locations at IRP Site No. 2 . . . . .	10
Cover Location of IRP Site No. 2 . . . . .	Inside Back Cover

**THIS PAGE INTENTIONALLY LEFT BLANK**

Decision Document for IRP Site No. 2, Area Behind Vehicle Maintenance Shop  
162nd CCG and 149th CBCS  
North Highland ANG, California

LIST OF TABLES

Table		Page
1	Maximum Concentrations Detected in Soil Vapor Samples Collected from IRP Site No. 2 . . . . .	12
2	Metals Detected in Soil Samples Collected from IRP Site No. 2 . . . . .	13

**THIS PAGE INTENTIONALLY LEFT BLANK**

Decision Document for IRP Site No. 2, Area Behind Vehicle Maintenance Shop  
162nd CCG and 149th CBCS  
North Highland ANG, California

## LIST OF ACRONYMS

AFB	Air Force Base
AGE	Aerospace Ground Equipment
ANGS	Air National Guard Station
BH	Borehole
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CBCS	Combat Communications Squadron
CCG	Combat Communications Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm/sec	Centimeters per second
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EO	Executive Order
GC	Gas Chromatograph
HHEM	Human Health Evaluation Manual
HQ ANG/CEVR	Headquarters Air National Guard Installation Restoration Program Branch
IRP	Installation Restoration Program
mg/kg	Milligrams per kilogram
MSL	Mean Sea Level
ND	Non-Detect
OpTech	Operational Technologies Corporation
PA	Preliminary Assessment
ppmv	Parts per million by volume
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SVOC	Semivolatile Organic Compound
TDL	Total Designated Level
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

THIS PAGE INTENTIONALLY LEFT BLANK

# DECISION DOCUMENT

## INSTALLATION RESTORATION PROGRAM AREA BEHIND VEHICLE MAINTENANCE

### SECTION 1.0 INTRODUCTION

#### 1.1 PURPOSE

The purpose of this Decision Document is to describe the history, evaluate analytical data, and document actions taken that have led to a recommendation of no further action for Installation Restoration Program (IRP) Site No. 2, the Area Behind Vehicle Maintenance, located at the 162nd Combat Communications Group (CCG) and 149th Combat Communications Squadron (CBCS), California Air National Guard, North Highlands Air National Guard Station (ANGS), Sacramento, California.

The Defense Environmental Restoration Program (DERP) was established in 1984 to promote and coordinate efforts for the evaluation and cleanup of contamination at Department of Defense (DoD) installations. On 23 January 1987, Presidential Executive Order (EO) 12580 assigned specific responsibility to the Secretary of Defense for carrying out DERP within the overall framework of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The IRP was established under DERP to identify, investigate, and clean up contamination at DoD installations. The IRP focused on cleanup of contamination associated with past DoD activities to ensure that threats to public health were eliminated and natural resources were restored for future use. Within the Air National Guard, the Headquarters Air National Guard (HQ ANG/CEVR) manages the IRP and related activities.

Conclusions contained in this Decision Document are based on evaluation of information provided in the following documents:

- Operational Technologies Corporation, 1995. Installation Restoration Program (IRP) Site Investigation Report For IRP Sites No. 1 and No. 2, 162nd CCG and 149th CBCS, California Air National Guard, North Highlands Air National Guard Station, Sacramento, California. San Antonio, Texas.

- Science and Technology, Inc., 1991. Installation Restoration Program Preliminary Assessment, North Highlands Air National Guard Station, California. Prepared for National Guard Bureau, Andrews Air Force Base, Maryland.

## 1.2 LOCATION

North Highlands ANGTS is located in Sacramento County, approximately six miles northeast of downtown Sacramento and adjacent to McClellan Air Force Base (AFB), as shown in Figure 1. The Station occupies approximately eight acres of relatively flat terrain just to the south of McClellan AFB. Roseville Road and the Southern Pacific railroad tracks are located approximately 100 feet to the north and west of the Station, and Interstate 80 borders the Station on the south and east. The mission of the 162nd Combat Communications Group is to install, operate, and maintain mobile communication facilities providing interbase and intrabase communications in support of tactical air forces and state emergencies.

## 1.3 ENVIRONMENTAL SETTING

North Highlands ANGTS is located in Sacramento County in the northern one-third of the Central Valley of California, which is referred to as the Sacramento Valley. The Central Valley, trending in a north/northwest to south/southeasterly direction, extends from the Klamath Mountains near Redding for some 400 miles, with an average width of 50 miles. The valley is bordered on the east by the Sierra Nevada Mountains, on the west by the Coast Range Mountains, and to the south by the Tehachapi Mountains. Much of the area within the Valley is level and appears as a broad, open plain. North Highlands ANGTS is located on relatively flat terrain with a surface elevation of 60 feet above mean sea level (MSL), with gentle slopes of less than 1 degree toward the west.

As previously described, the Central Valley lies between two major mountain ranges in an asymmetrical, structural trough. Sediments in the trough range in age from Late Jurassic to Holocene and are predominantly the result of periods of uplift in the Sierra Nevada, followed by erosion of these highlands to the valley floor. As much as 10 vertical miles of sediment have been deposited within this valley. Along the flanks of the valley, which correspond to the flanks of the trough, deposits are generally thinner.

A very complex fluvial environment was created in the vicinity of North Highlands ANGTS by the variation in climatic conditions and the sediment generated by successive periods of glaciation during the Pliocene and Pleistocene epochs in the Sierra Nevada. The geologic



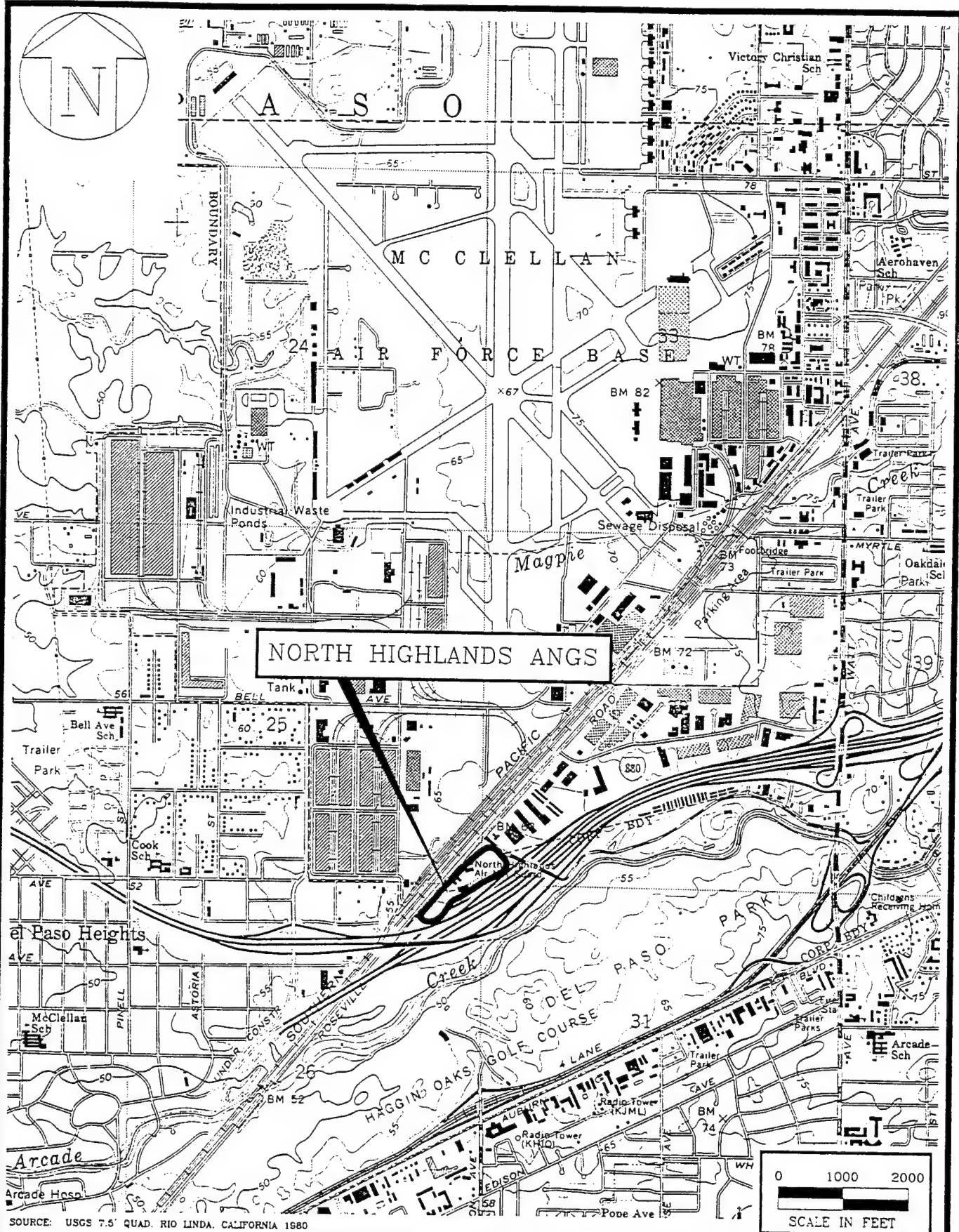


FIGURE 1

NORTH\NHGH4-1L

# STATION LOCATION MAP

162nd CCG & 149th CBCS  
North Highlands ANG  
California

OPTTECH  
OPERATIONAL TECHNOLOGIES  
CORPORATION

FEBRUARY 1996

sequence is a series of gently sloping alluvial plain sediments that consist of channel fills, sand bars, oxbow lake deposits, and widespread flood deposits. As a result of the processes occurring in the alluvial environment, deposits consisting of any one lithologic type are limited in horizontal and vertical extent. Coarse deposits may grade laterally into fine deposits, and fine into coarse across short distances (less than 25 feet). The interbedded and gradational deposits that are formed are heterogeneous in grain size distribution, texture, porosity, and permeability over short distances. Although individual beds are discontinuous, some deposits may locally occur adjacent to or overlying deposits of similar porosity and permeability.

The soil at North Highlands ANG is of the San Joaquin association, which is a moderately shallow sandy loam that occurs on gentle slopes (three to eight percent) in old valley plains cut by small drainageways. The surface soil has an average thickness of six inches and is a light brown or reddish brown, strongly to medium acid sandy loam that dries out moderately hard. The upper subsoil extends to depths of 12 to 30 inches and is a light clay loam, slightly more acid than the surface soil. The deeper subsoil is a reddish-brown or brown, compact clay that becomes more gray with depth and then turns olive-gray immediately above the impervious hard pan layer which varies in depth from 15 to 42 inches below land surface (BLS). Surface soil permeability is moderate ( $4.45 \times 10^{-4}$  centimeters per second (cm/sec) to  $1.41 \times 10^{-3}$  cm/sec), but subsoil/substratum permeability is very low (less than  $4.24 \times 10^{-5}$  cm/sec). The erosion hazard is slight. The information pertaining to soil was derived from the Soil Survey of Sacramento Area, California (U. S. Department of Agriculture, Soil Conservation Service, Series 1941, No. 11, August 1945).

Aquifers containing fresh groundwater are principally heterogenous, unconsolidated, continental deposits (primarily alluvium). The lower unit of the Mehrten Formation yields little water due to the impermeable nature of the tuff-breccia and many of the clay beds. Much of the water is in a state of semi-confinement. Conversely, the upper unit yields large quantities of potable groundwater and is a primary source for many public supply wells.

North Highlands ANG is located in the Sacramento/American River drainage basin approximately five miles east (up river) of the intersection of the Sacramento and American Rivers. Surface flow off the facility is through storm drains and/or directly into open ditches flowing westward into Arcade Creek (see Figure 2). Arcade Creek flows toward this intersection. North Highlands ANG has been classified as being outside the 100-year floodplain.

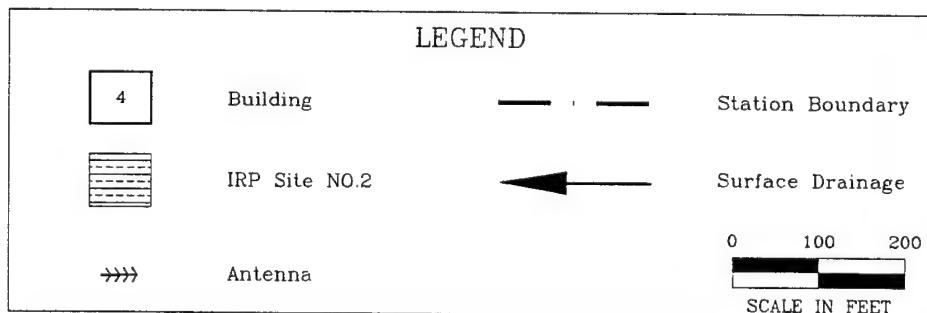
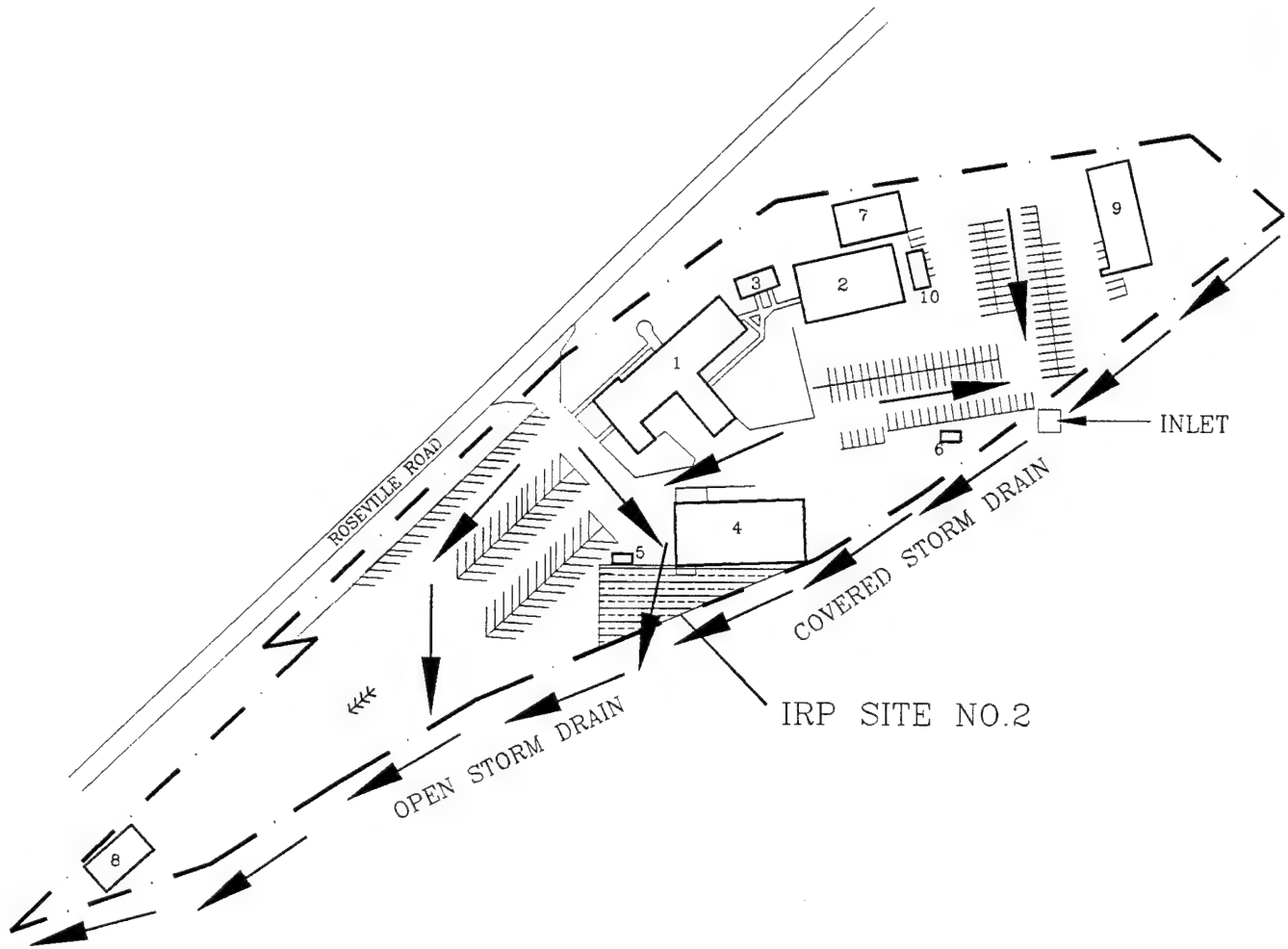
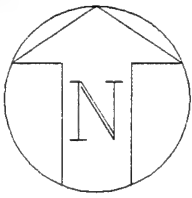


FIGURE 2

SURFACE WATER DRAINAGE MAP  
162nd CCG & 149th CBCS  
North Highlands ANG  
California

NORTH\NHGH4-9S

OPTTECH  
OPERATIONAL TECHNOLOGIES  
CORPORATION

FEBRUARY 1996

The climate in the area of North Highlands ANGS is characterized by dry, hot summers and moist, cool winters. Prevailing southerly Pacific Ocean winds provide an annual temperature of 61.4° Fahrenheit (° F). Monthly average temperatures range from 46.0° F in January to 76.1° F in July. Annual precipitation at the Station, based on a 29-year record from 1951 to 1980, averages 18.0 inches, and most of the yearly precipitation occurs during the period from October through April.

According to records maintained by the California Department of Fish and Game Natural Diversity Database, no endangered or threatened species of flora or fauna have been identified within a one-mile radius of the Station (Science and Technology, Inc., 1991). There are approximately 123.7 acres of wetlands within 4 miles of the site.

## **SECTION 2.0 BACKGROUND**

### **2.1 SITE HISTORY**

IRP Site No. 2 is located on the south side of North Highlands ANGS (see Figure 3). The site is located immediately behind Building 4, the Vehicle Maintenance Shop, and extends to the west approximately 85 feet, and then extends south to the boundary fence line (see Figure 4). The site is covered with asphalt and is used for the storage of vehicles and grounds/vehicle maintenance equipment. Waste oil, antifreeze, and fuel/transmission filters are also stored at the site in 55-gallon drums. A washrack and oil/water separator, which was installed in 1973, is located behind the southwest corner of Building 4. Drainage from the washrack flows into the oil/water separator which is connected to the sanitary sewer. An open storm drain, located outside the Station boundaries, parallels the fence line south of the site.

This area was used predominantly for the maintenance of ground equipment, including vehicles and generators, from the early 1960s until 1982 when the new Aerospace Ground Equipment (AGE) Shop was constructed. Those maintenance operations resulted in frequent releases of small amounts of waste oils, solvents, fuels, paint, and thinners. The actual quantities of the releases are unknown.

Two environmental studies have been conducted at North Highlands ANGS that included the Area Behind Vehicle Maintenance. These are summarized in Section 2.2 in chronological order.

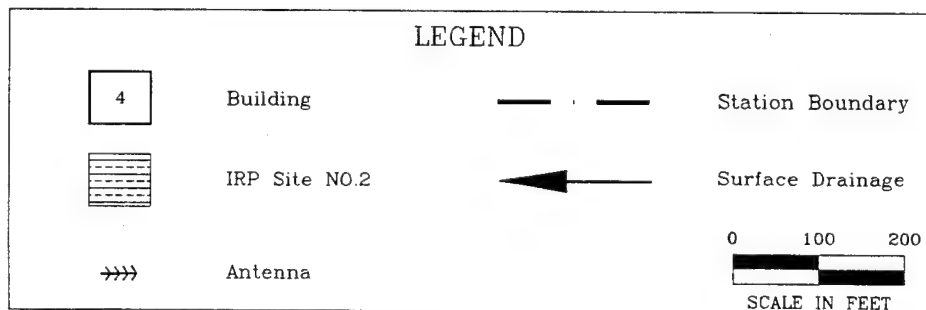
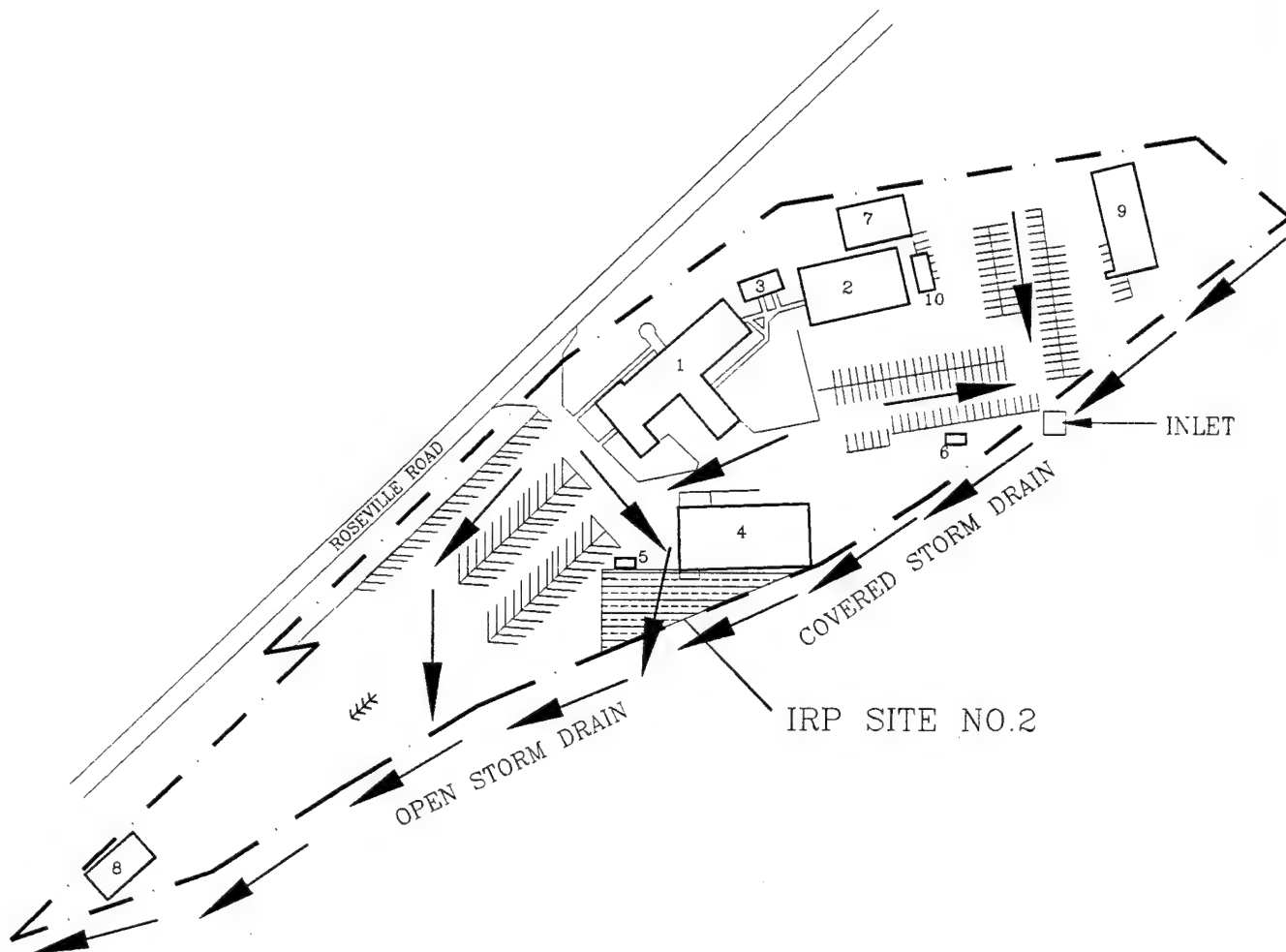
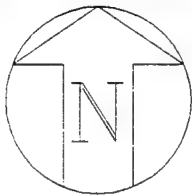
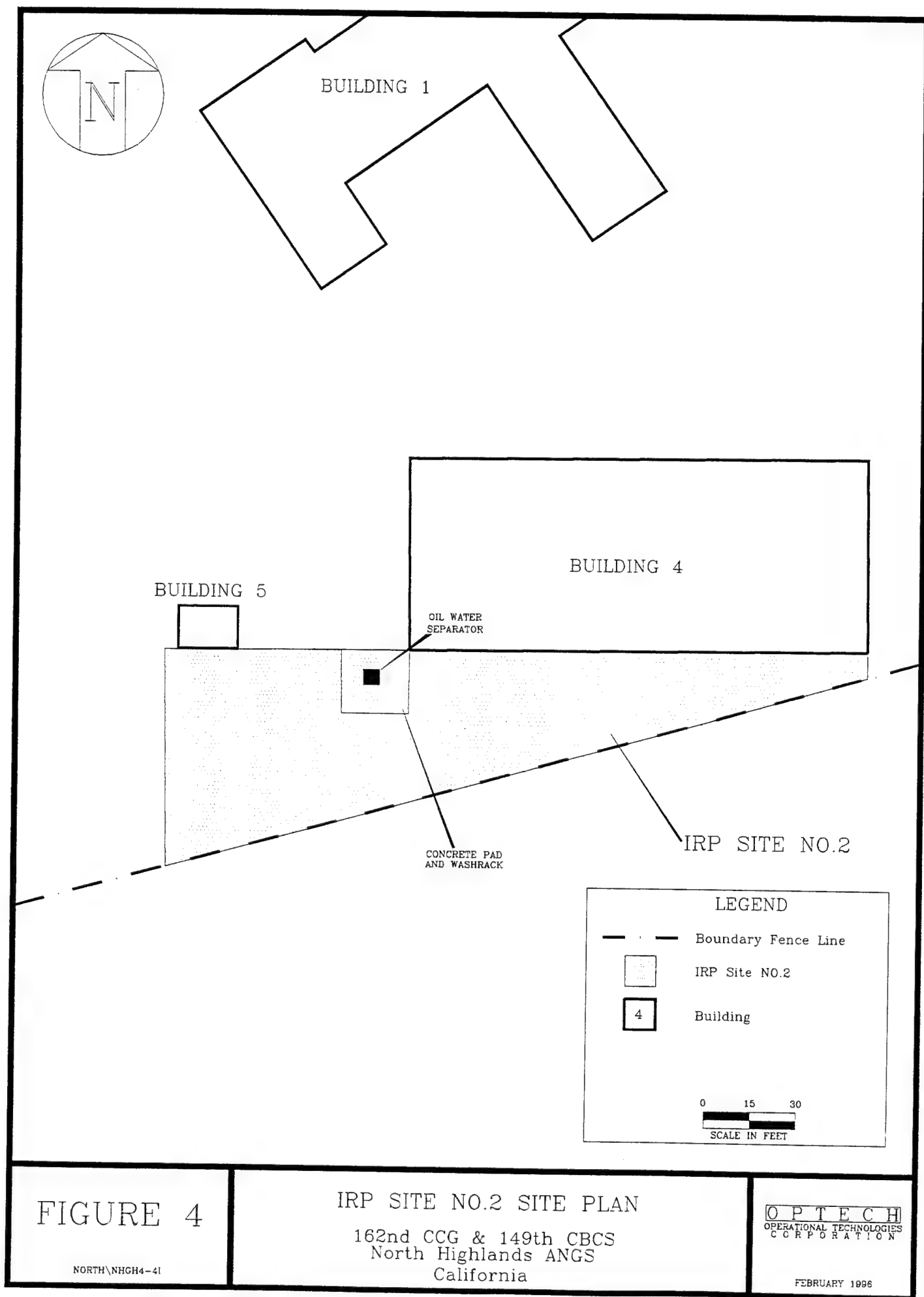


FIGURE 3

LOCATION OF IRP NO.2  
 162nd CCG & 149th CBCS  
 North Highlands ANG  
 California

OPTTECH  
 OPERATIONAL TECHNOLOGIES  
 CORPORATION

FEBRUARY 1996



## 2.2 INVESTIGATION RESULTS

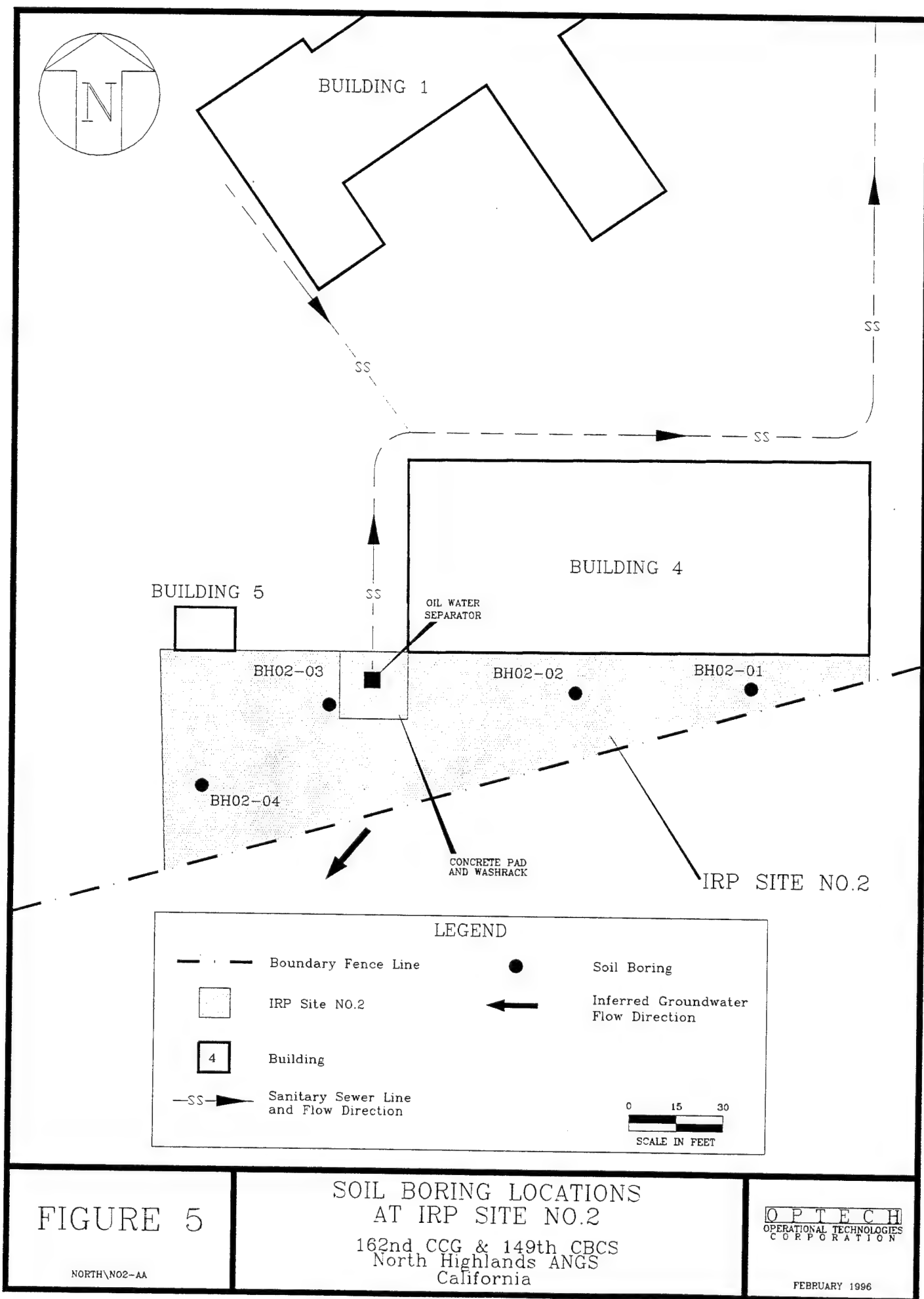
### 2.2.1 Preliminary Assessment

A Preliminary Assessment (PA) of the 162nd CCG and the 149th CBCS, North Highlands ANG, was conducted by Science and Technology, Inc., in April 1990. Information obtained through interviews, review of Station records, and field observations resulted in the identification of two potentially contaminated disposal and/or spill sites, one of which was designated as IRP Site No. 2 (Area Behind Vehicle Maintenance), the other IRP Site No. 1 (Old AGE Shop). IRP Site No. 2 was used for disposal of small amounts of waste solvents, paints, and thinners. Because the potential for contaminant migration existed at the two sites identified at North Highlands ANG, each was recommended for further investigation under the IRP.

### 2.2.2 Site Investigation

IRP Site No. 2 (Area Behind Vehicle Maintenance) was one of the two sites investigated in a Site Investigation (SI) conducted by Operational Technologies Corporation (OpTech) from March 1994 to September 1995 at the 162nd CCG and the 149th CBCS. SI activities conducted at IRP Site No. 2 included a soil vapor survey, field screening of soil samples with a portable gas chromatograph (GC), and the drilling of four soil borings. The location of the soil borings at IRP Site No. 2 are shown on Figure 5.

Twenty-eight investigative and two duplicate soil vapor samples were collected during the drilling of borings and were analyzed for halogenated volatile hydrocarbons, total petroleum hydrocarbons (TPH), and benzene, toluene, ethylbenzene, and xylenes (BTEX). Soil vapor samples were collected from depths of 11, 21, 31, 41, 51, and 61 feet BLS. Ethylbenzene, toluene, total xylenes, and chloroform were detected at maximum concentrations of 0.08 parts per million by volume (ppmv), 0.30 ppmv, 0.21 ppmv, and 0.39 ppmv, respectively, in soil vapor samples collected from BH02-03. Benzene was detected at a concentration of 0.05 ppmv in the soil vapor samples collected from borings BH02-01 and BH02-02 from a depth of 11 feet BLS. Carbon tetrachloride was detected at a maximum concentration of 0.31 ppmv in the soil vapor samples collected from borings BH02-02 and BH02-03 from a depth of 41 feet BLS. 1,1-Dichloroethene was detected at a maximum concentration of 0.04 ppmv in the soil vapor sample collected from boring BH02-01 from a depth of 31 feet BLS. Bromodichloromethane was detected at a maximum concentration of 0.13 ppmv in the soil vapor sample collected from boring BH02-04 from a depth of 51 feet BLS. TPH was detected at a maximum concentration





of 7.0 ppmv in soil vapor samples collected from IRP Site No. 2. Maximum concentrations detected in soil vapor samples are shown in Table 1.

Fifty-three soil samples were field screened with a Photovac 10S55 portable GC, calibrated to screen for BTEX. Xylenes were detected at concentrations ranging from 7 to 70 parts per billion (ppb) in two of the soil samples analyzed; and ethylbenzene and toluene were detected at 76 ppb and 39 ppb, respectively, in one of the samples analyzed. Benzene was not detected in any of the samples analyzed.

Eleven investigative soil samples, and two duplicate soil samples, were collected from the borings and submitted for laboratory analysis. All borings were drilled to a depth of 60 feet BLS, with the exceptions of boring BH02-01, which was drilled to a depth of 63.5 feet BLS, and boring BH02-04, which was drilled to a depth of 110.5 feet BLS. Samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), priority pollutant metals, TPH both as gasoline and as diesel, and oil and grease. No VOCs, SVOCs, TPH, or oil and grease were detected in soil samples collected from IRP Site No. 2.

A Total Designated Level (TDL) was calculated for each metal using the Designated Level Methodology outlined in The Designated Level Methodology for Waste Classification and Cleanup Level Determination (California Regional Water Quality Control Board, Central Valley Region, 1989) (see Table 2). Chromium and nickel were detected at concentrations exceeding TDLs in soil samples collected from boring BH02-04 from depths of 92 feet BLS, 105 feet BLS, and 110 feet BLS. Chromium was detected at concentrations of 10.0 milligrams per kilogram (mg/kg), 23.0 mg/kg, 26.0 mg/kg, and 28.0 mg/kg in samples collected from depths of 92 feet BLS, 105 feet BLS, 105 feet BLS (duplicate), and 110 feet BLS, respectively. Nickel was detected at concentrations of 12.0 mg/kg, 41.0 mg/kg, 42.0 mg/kg, and 56.0 mg/kg in samples collected from depths of 92 feet BLS, 105 feet BLS, 105 feet BLS (duplicate), and 110 feet BLS, respectively. These concentrations of chromium and nickel do not exceed the respective ranges of naturally-occurring concentrations of each of these metals for the Sacramento area. Metals were detected above background levels but pose a minimal threat or any adverse effects upon human health or any ecological receptors.

### **2.3 PRELIMINARY RISK ASSESSMENT**

The purpose of a preliminary risk assessment is to determine whether the presence of chemicals at 162nd CCG and 149th CBCS facilities pose an immediate or substantial hazard to human health or the environment that may require interim remedial action. This evaluation also

**Table 1**  
**Maximum Concentrations Detected in Soil Vapor Samples**  
**Collected from IRP Site No. 2**  
**162nd CCG and 149th CBCS, North Highlands ANG, California**

Analytical Parameter	Maximum Concentration Detected (ppmv)	Detection Limit (ppmv)
1,1-Dichloroethene	0.04	0.01
Methylene Chloride	ND	0.01
trans-1,2-Dichloroethene	ND	0.01
1,1-Dichloroethane	ND	0.01
Chloroform	0.39	0.01
1,1,1-Trichloroethane	ND	0.01
Carbon Tetrachloride	0.31	0.01
1,2-Dichloroethane	ND	0.01
Trichloroethene	ND	0.01
1,2-Dichloropropane	ND	0.01
Bromodichloromethane	0.13	0.01
cis-1,3-Dichloropropene	ND	0.01
trans-1,3-Dichloropropene	ND	0.01
1,1,2-Trichloroethane	ND	0.01
Tetrachloroethene	ND	0.01
Benzene	0.05	0.01
Toluene	0.30	0.01
Ethylbenzene	0.08	0.01
Total Xylenes	0.21	0.01
Total Petroleum Hydrocarbons	7.0	1.0

ppmv – parts per million by volume.

ND – Not Detected.

addresses the impacts, if any, resulting from potential exposure to the site-related chemicals. This preliminary risk evaluation, which is based on a qualitative review of available soil data, characterizes the potential environmental hazards of the current soil conditions to determine if further investigation is needed.

A risk assessment identifies potential migration and exposure pathways for site-related chemicals. Exposure to site-related chemicals in soils via primary pathways may occur through dermal contact, inhalation, or ingestion, while chemicals transported in the groundwater may be transported to any drinking water wells located in the area. A storm drain is located along the Station; therefore, surface water runoff could become a potential pathway if surface contamination were to occur. However, this is not a concern at this time.

IRP Site No. 2 is covered with asphalt, and site-related contaminants are found in the subsurface soils. Therefore, exposure pathways associated with surface soils (i.e., windblown particulates) would not be of concern. Under these conditions, chronic exposure to either human or

**Table 2**  
**Metals Detected in Soil Samples**  
**Collected from IRP Site No. 2**  
**162nd CCG and 149th CBCS, North Highlands ANG, California**

Sample ID Number <sup>†</sup>	Arsenic (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Mercury (mg/kg)	Zinc (mg/kg)	Selenium (mg/kg)
BH02-01-32'	0.76	11.0	21.0	5.8	14.0	0.20U	67.0	0.040U
BH02-01-62'	0.500U	9.5	85.0	4.3	15.0	0.20U	66.0	0.039U
BH02-01-62'-DUP	0.52	6.5	15.0	2.5	8.9	0.046	39.0	0.040U
BH02-02-42'	1.8	4.7	9.4	2.4	9.6	0.20U	38.0	0.040U
BH02-02-59'	0.500U	8.3	24.0	3.3	15.0	0.20U	51.0	0.040U
BH02-03-42'	30.0U	8.4	13.0	6.5	50.0U	0.010U	29.0	0.23
BH02-03-59'	0.67	10.0	16.0	4.0	13.0	0.010U	33.0	0.15U
BH02-04-12'	0.99	8.6	22.0	4.0	9.1	0.080	30.0	0.040U
BH02-04-52'	1.0	11.0	21.0	3.7	15.0	0.010U	28.0	0.039U
BH02-04-92'	0.500U	10.0	16.0	2.6	12.0	0.010U	29.0	0.039U
BH02-04-GW-105'*	1.0U	23.0	16.0	1.5U	41.0	0.016	27.0	1.0U
BH02-04-GW-105'-DUP*	1.0U	26.0	17.0	1.7	42.0	0.014	30.0	1.0U
BH02-04-110'	1.0U	28.0	34.0	3.0	56.0	0.017	45.0	1.00U
Maximum Background Concentrations	0.500U	10.0	11.0	4.0	19.0	0.050	34.0	0.040U
Range of Naturally-Occurring Regional Concentrations <sup>†</sup>	6.5 - 16	50 - 100	30 - 700	10 - 20	20 - 700	.051 - .02	45 - 120	0.2 - 0.5
Total Designated Levels above 62.0 feet BLS	500.0 <sup>b</sup>	500.0 <sup>b</sup>	10,000.0 <sup>c</sup>	500.0 <sup>b</sup>	1,000.0 <sup>a</sup>	20.0 <sup>b</sup>	50,000.0 <sup>c</sup>	100.0 <sup>b</sup>
Total Designated Levels below 62.0 feet BLS	5.0 <sup>b</sup>	5.0 <sup>b</sup>	100.0 <sup>c</sup>	5.0 <sup>b</sup>	10.0 <sup>a</sup>	0.2 <sup>b</sup>	500.0 <sup>c</sup>	1.0 <sup>b</sup>

mg/kg - milligrams per kilogram.

BH - Borehole.

DUP - Duplicate.

ID - Identification.

USEPA - United States Environmental Protection Agency.

U - Compound was analyzed for but not detected. Number preceding "U" indicates the detection limit.

\* - Samples were collected as groundwater samples. However, the high silt content of the samples precluded them from being analyzed as water samples. Filtering was not considered a feasible option, and the samples were analyzed as solids.

<sup>†</sup>Shacklette and Boerngen, 1984.

<sup>†</sup>Note: Sample ID numbers include the depth of the sample, expressed in feet below land surface.

<sup>a</sup>Derived from USEPA Primary Maximum Contaminant Level (MCL) water quality goal.

<sup>b</sup>Derived from California Dept. of Health Services Primary MCL water quality goal.

<sup>c</sup>Derived from California Dept. of Health Services Secondary MCL water quality goal.

ecological receptors would not occur. A possibility does exist that human receptors may be exposed via inadvertent ingestion of soils as a result of any future potential construction activities in the area.

Groundwater samples collected from a monitoring well located on the Station contained no analytes which were above action levels, with the exception of nickel, which was detected at 0.15 ppm during one sampling event, and at 0.28 ppm during a second sampling event. The Maximum Contaminant Level (MCL) for nickel is 0.10 ppm.

Exposure pathways to site contaminants for both human and ecological receptors is minimal. Public access to the Station is controlled by security personnel. Due to the absence of appropriate habitats for wildlife at the site, exposure for ecological receptors is also unlikely. At present, there are no future plans for use of the Station other than to continue as its present use.

No VOCs, SVOCs, TPH, or oil and grease were detected in soil samples collected at IRP Site No. 2. Concentrations of chromium and nickel were detected above TDLs in two soil borings. However, these concentrations did not exceed the respective ranges of naturally-occurring concentrations of these metals in the Sacramento area. Based on the evaluation of these data and the site conditions, these contaminants will not have a long-term adverse effect upon human health or any ecological receptors.

### **2.3.1 Conclusions and Recommendations**

The metals present in the subsurface soils at North Highlands ANGS do not present an immediate or substantial hazard to human health or environmental receptors. Based on current knowledge of IRP Site No. 2 conditions, this area does not present a significant threat to health either presently or under a future-use scenario, nor will the site have an impact upon important environmental receptors.

## **SECTION 3.0 CONCLUSIONS**

Chromium and nickel were the only analytes detected in soil samples collected during the SI at concentrations exceeding TDLs, derived for use as cleanup levels. The California Regional Quality Control Board TDL for chromium for this site was 500.0 mg/kg (1,000.0 mg/kg for nickel) above 62 feet BLS and 5.0 mg/kg (10.0 mg/kg for nickel) below 62 feet BLS. Four chromium samples and four nickel samples out of a total of 13 samples (including two

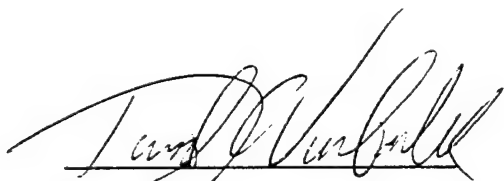
duplicates) exceeded the lower standards. Chromium and nickel were detected at concentrations exceeding TDLs in soil samples collected from boring BH02-04 from depths of 92 feet BLS, 105 feet BLS, and 110 feet BLS. Chromium was detected at concentrations of 10.0 mg/kg, 23.0 mg/kg, 26.0 mg/kg, and 28.0 mg/kg in samples collected from depths of 92.0 feet BLS, 105.0 feet BLS, 105.0 feet BLS (duplicate), and 110.0 feet BLS, respectively. Nickel was detected at concentrations of 12.0 mg/kg, 41.0 mg/kg, 42.0 mg/kg, and 56.0 mg/kg in samples collected from depths of 92 feet BLS, 105 feet BLS, 105 feet BLS (duplicate), and 110 feet BLS, respectively. These concentrations of chromium and nickel do not exceed the respective ranges of naturally-occurring concentrations of each of these metals in the Sacramento area.

#### SECTION 4.0 RECOMMENDATION

Based on the evaluation of the information contained in the above cited documents, and the decision of the California Department of Toxic Substances Control and the California Regional Water Quality Control Board (see Appendix), it is recommended that no further IRP action is necessary at IRP Site No. 2, Area Behind Vehicle Maintenance.

#### SECTION 5.0 DECISION

Based on evaluation of the information contained in the above cited documents, no further IRP action is warranted for IRP Site No. 2, Area Behind Vehicle Maintenance, 162nd Combat Communications Group and 149th Combat Communications Squadron, North Highlands Air National Guard Station, California.



DAVID C. VAN GASBECK  
Chief, Environmental Division  
Civil Engineer Directorate  
Air National Guard

## SECTION 6.0 REFERENCES

- California Regional Water Quality Control Board, Central Valley Region, 1989. The Designated Level Methodology for Waste Classification and Cleanup Level Determination. Sacramento, California.
- California Regional Water Quality Control Board, Central Valley Region, 1991. September 1991 Edition of "Water Quality Goals." Sacramento, California.
- California Regional Water Quality Control Board, San Francisco Bay Region, 1990. Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites.
- Operational Technologies Corporation, 1994. Installation Restoration Program (IRP) Site Investigation Work Plan For IRP Sites No. 1 and No. 2, 162nd CCG and 149th CBCS, California Air National Guard Station, Sacramento, California. San Antonio, Texas.
- Operational Technologies Corporation, 1995. Installation Restoration Program (IRP) Site Investigation Report For IRP Sites No. 1 and No. 2, Volume I, 162nd CCG and 149th CBCS, California Air National Guard Station, Sacramento, California. San Antonio, Texas.
- Science and Technology, Inc., 1991. Installation Restoration Program Preliminary Assessment, North Highlands ANG, California. Prepared for National Guard Bureau, Andrews Air Force Base, Maryland.
- Shacklette, T. and Boerngen, J. G., 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U. S. Geological Survey Professional Paper No. 1270.
- U. S. Department of Agriculture, Soil Conservation Service, Series 1941, No. 11, August 1945. Soil Survey of Sacramento Area, California.
- U. S. Geological Survey. Geologic Map of the Sacramento Valley, California (Plate 1). (1986), in "Geology of the Fresh Groundwater Basin of the Central Valley, California," (Professional Paper 1401-C: Division of Mines and Geology) Washington, D. C.

**APPENDIX**

THIS PAGE INTENTIONALLY LEFT BLANK



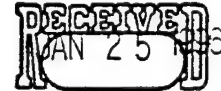
## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

REGION 1

10151 CROYDON WAY, SUITE 3  
SACRAMENTO, CA 95827-2106

(916) 255-3565

January 19, 1996



162 CCG/EM  
Colonel Edward C. Fager  
3900 Roseville Road  
North Highlands Air National Guard Station, California 95660-5794

APPROVAL OF THE FINAL SITE INVESTIGATION REPORT FOR INSTALLATION  
RESTORATION PROGRAM SITES NO. 1 AND NO. 2, NORTH HIGHLANDS AIR  
NATIONAL GUARD STATION

Dear Colonel Fager:

The Department of Toxic Substances Control's (DTSC) and the Central Valley Regional Water Quality Control Board (RWQCB) have reviewed and hereby approve the Final Site Investigation Report for the North Highlands Air National Guard Station (ANGS), dated September, 1995.

Pursuant to the California Health and Safety Code, Division 20, Chapter 6.8, DTSC, in concurrence with the RWQCB (see enclosure), has made the determination that, with regard to hazardous substances, no further action is required at the North Highlands ANGS. The State has made this determination based on review of the available information on the site. If additional information is discovered or gathered regarding this Site, further investigation and/or remediation may be required.

If you have any questions or comments regarding this matter, please contact Mr. Mark Malinowski at (916) 255-3717.

Sincerely,

Anthony J. Landis, P.E.  
Chief, Northern California Operations  
Office of Military Facilities

Enclosure

cc: See next page.



Colonel Edward C. Fager  
January 19, 1996  
Page Two

cc: Ms. Karen Bessette  
Regional Water Quality Control Board  
Central Valley Region  
3443 Routier Road, Suite A  
Sacramento, California 95827-3098

Mr. Mike Frey  
HQ ANGRC/CEVR  
3500 Fetchet Avenue  
Andrews Air Force Base, Maryland 20331-5157

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION**

3443 Rortier Road, Suite A  
Sacramento, CA 95827-3098  
PHONE: (916) 255-3000  
FAX: (916) 255-3015



10 January 1996

Mr. Mark Malinowski  
Department of Toxic Substances Control  
10151 Croyden Way, Suite 3  
Sacramento, CA 95827-2106

***FINAL INSTALLATION RESTORATION PROGRAM (IRP) SITE INVESTIGATION REPORT  
FOR IRP SITES NO. 1 AND NO. 2, NORTH HIGHLANDS AIR NATIONAL GUARD STATION  
(ANGS), SACRAMENTO***

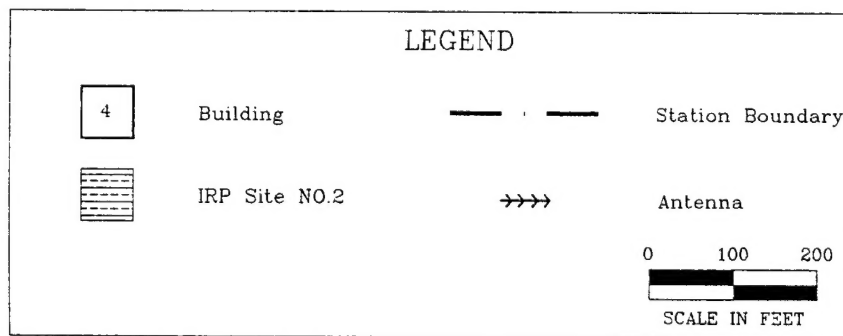
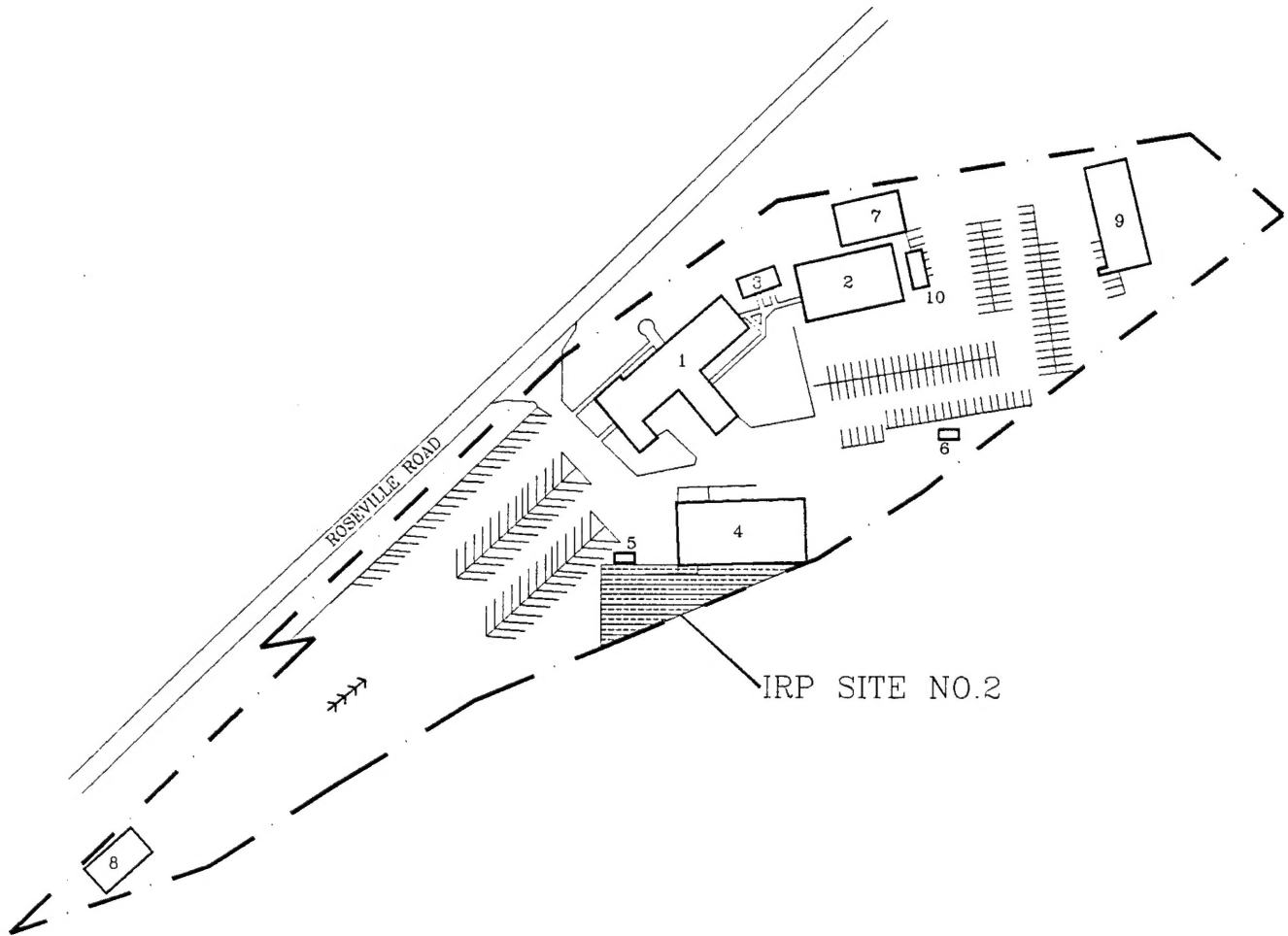
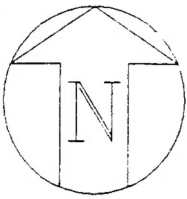
We have reviewed the Final Site Investigation Report (Final SI Report) submitted for North Highlands ANGS on 15 September 1995. Based on the site investigation results presented in this report, it appears that the extent of soil contamination present at both IRP Sites No. 1 and No. 2 is limited and does not pose a threat to the beneficial uses of the State's water. Based on the information provided in the Final SI Report, Board staff has determined that no further investigation, remedial action, or monitoring is required at this time at North Highlands ANGS.

Nothing in this determination shall constitute or be construed as a satisfaction or release from liability for any conditions or claims arising as a result of past, current or future operations at North Highlands ANGS. Nothing in this determination is intended or shall be construed to limit or preclude the Board, or any other agency, from taking any further enforcement actions. This letter does not relieve North Highlands ANGS of any responsibilities mandated under the California Health and Safety Code and the California Water Code if existing, additional, or previously-unidentified contamination at the site causes or threatens to cause pollution or nuisance or is found to pose a threat to public health or water quality.

If you have any questions, please call the Project Manager, Karen Bessette, at (916) 255-3065.

J. Lawrence Pearson, P.E.  
Supervising WRC Engineer  
Site Cleanup Section

THIS PAGE INTENTIONALLY LEFT BLANK



INSIDE  
BACK  
COVER  
NORTH\NHGH4-2L

LOCATION OF IRP SITE NO.2  
162nd CCG & 149th CBCS  
North Highlands ANG  
California

OPTTECH  
OPERATIONAL TECHNOLOGIES  
CORPORATION

FEBRUARY 1996